REMARKS/ARGUMENTS

Claims 40, 42-43, 46-49 and 60-61 have been resubmitted.

35 U.S.C. §103

Claims 40, 42-43, 46-49 and 60-61 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Sawhney et al. (U.S. Patent No. 5,570,708) in view of Hai et al. (Bioconjugate Chem., 2000). Applicants respectfully traverses and request reconsideration.

Applicants submit that the present invention is not obvious over the Sawhney patent or Hai reference, either alone or in combination. The present claimed invention is directed toward a method of integrating a hydrogel to a musculoskeletal tissue where the hydrogel is covalently bound to the tissue. The method comprises priming the surface of the tissue with a polysaccharide having at least one aldehyde group, wherein the aldehyde group reacts with naturally-occurring amino moieties found on the surface of the tissue. The polysaccharide also has at least one free-radical polymerizable group. After applying the polysaccharide primer to the tissue, a polymerizable agent and a radical photoinitiator are added to the primed tissue where the polymerizable agent has at least one free-radical polymerizable group. A radical reaction is then initiated, creating a hydrogel from the polymerizable agent and where the polymerizable agent is also covalently bound to the polysaccharide primer, allowing for an integrated hydrogel covalently bound to the musculoskeletal tissue.

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The Sawhney patent teaches priming a tissue surface with a polymerization initiator. The polymerization initiator may include monomers that can polymerize, but unlike the present invention, these do not covalently bind to the tissue and are unreactive before polymerization. The Sawhney patent does not teach or suggest any method where the polymerization initiator *is not* applied directly to the tissue. In fact, the skilled artisan, upon reading the Sawhney patent, would know that the basis of the invention described therein, is the priming with the polymerization initiator to provide better adhesion of a polymer barrier or coating to the tissue. Specifically, the Sawhney patent states that the methods encompass "any means of application and mixing which results in both an absorbed layer of initiator, and a layer of monomer incorporating an initiator, being present on a surface to be coated." Column 6, lines 4-9. The Sawhney patent defines an initiator as "a composition which under appropriate conditions will result in the polymerization of a monomer." Column 9, lines 63-65. Moreover, Example 25 shows the dependence on the amount of initiator to the strength of adherence of the polymer layer to a surface. It also shows that the strength of adherence is dependent on the absorption of the initiator to the surface.

In contrast, the method of the present invention does not have an initiator present in the priming agent, nor is it necessary for adherence of the priming agent to the tissue surface. It is covalently bound before any polymerization reaction occurs without the need for an initiator. After the priming agent is bound to the tissue, then a polymerizable agent with an initiator is added and polymerization initiated.

Moreover, the Hai reference does not makeup for such deficiencies of the Sawhney. The Hai reference teaches increasing the overall negative charge of

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extracellular human hemoglobin by attaching a truncate and modified chondrotin-4-sulfate to the hemoglobin through an aldehyde group on the chondrotin-4-sulfate. The reference does not teach or suggest using a polysaccharide to covalently bind to a tissue surface as a priming agent to aid in binding a hydrogel to said surface.

Applicants further submit that the skilled artisan, upon reading the Sawhney patent and the Hai reference would not be motivated to substitute the chondrotin-4-sulfate of the Hai reference for the initiator of the Sawhney patent. As discussed above, the crux of the method of Sawhney patent in priming the tissue surface with an initiator that will initiate a polymerization reaction. The initiator is absorbed to the surface and increasing the amount of initiator increases adherence. Initiators are normally small molecules that easily absorb into a surface and, as such, the concentration can be readily increased. Polysaccharides are large polymers and the skilled artisan would appreciate that only a finite number of polysaccharide molecules could covalently bind to the surface of the tissue. Therefore, there would be no motivation for the skilled artisan to substitute the initiator of the Sawhney patent with the chondrotin-4-sulfate of the Hai reference.

Applicants thus respectfully request withdrawal of the rejection.

Double Patenting

Claims 40, 42-43, 46-49 and 60-61 have been provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 40-75 of copending Application No. 11/369,578, claims 1, 2, 9,10 and 15copending Application No. 10/962,278 in view of the Hai reference, claims 4-7, 15, 18 and 22 of copending Application No. 11/637,516 in view of the Hai reference

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or claims 53, 63, 65 and 77 of copending Application No. 10/681,753 in view of the Hai reference.

Applicants acknowledge the rejection and will address the rejection when claims are allowed in either the present case or any of the copending applications.

CONCLUSION

Applicants submit that the claims not stand ready for allowance and such allowance is courteously solicited.

In the event the examiner wishes to discuss any aspect of this response, please contact the attorney at the telephone number identified below.

☒ The Commissioner is hereby authorized to charge payment of the following fees with this communication or credit any overpayment to Deposit Account No. 02-3223:

☒ Any filing fees under 37 CFR 1.16 for the presentation of extra claims.

Respectfully submitted,

By: /Barbara S. Gibbs/
Barbara S. Gibbs, Ph.D.
Attorney Registration No. 44,708

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